

WHAT IS CLAIMED IS:

1. A multiwell plate for use in assaying samples, comprising:

5 a frame that forms sidewalls of at least one well, the frame being formed from a polymeric material; and

10 a layer that forms a bottom wall of the at least one well, the layer being formed from an inorganic material, wherein said frame and said layer are attached and bound to one another by an adhesive mixed with an additive that interacts with the adhesive, said frame and said layer in a manner which strengthens a bond between said frame and said layer.

15 2. The multiwell plate of Claim 1, wherein said polymeric material is polystyrene.

20 3. The multiwell plate of Claim 1, wherein said inorganic material is glass.

4. The multiwell plate of Claim 3, wherein said glass has been cleaned by pyrolysis.

25 5. The multiwell plate of Claim 1, wherein said adhesive is a non-cytotoxic adhesive.

6. The multiwell plate of Claim 1, wherein said additive is a silane monomer.

7. The multiwell plate of Claim 1, wherein said additive is 3-(trimethoxysilyl)propyl methacrylate.

8. A multiwell plate forming a plurality of sample wells for holding samples to be assayed, said multiwell plate comprising:

an upper plate that forms sidewalls of the sample wells, said upper plate made from a polymeric material; and

a lower plate that forms bottom walls of the sample wells, said lower plate made from glass, wherein said upper plate is joined to said lower plate by an adhesive mixed with a silane monomer that polymerizes to form a compatible network with the adhesive and also interacts with said upper plate and said lower plate to strengthen a bond between said upper plate and said lower plate.

9. The multiwell plate of Claim 8, wherein said polymeric material is polystyrene.

10. The multiwell plate of Claim 8, wherein said adhesive mixed with the silane monomer is a non-cytotoxic adhesive.

11. The multiwell plate of Claim 8, wherein said upper plate is treated with a plasma to create reactive groups that interact with the adhesive and the silane monomer.

5 12. The multiwell plate of Claim 8, wherein said silane monomer has a molecular formula $C_{10}H_{20}O_5Si$.

13. A method for making a multiwell plate, said method comprising the steps of:

10 providing an upper plate that forms sidewalls of at least one well, said upper plate made from a polymeric material;

15 providing a lower plate that forms a bottom wall of the at least one well, said lower plate made from an inorganic material; and

20 joining said upper plate to said lower plate using an adhesive mixed with an additive that interacts with the adhesive, said upper plate and said lower plate in a manner which strengthens a bond between said upper plate and said lower plate.

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14. The method of Claim 13, wherein said step of joining further includes the steps of:

mixing the adhesive and the additive;

5 applying a substantially thin film of the mixed adhesive and additive onto one of said plates;

placing said other plate onto the mixed adhesive and additive; and

10 applying a vacuum to bring said upper plate and said lower plate into close proximity while the additive polymerizes to form a compatible network with the adhesive and also interacts with said upper plate and said lower plate to strengthen a bond between said upper plate and said lower plate.

15 15. The method of Claim 13, wherein said step of joining further includes the step of treating said upper plate is treated with a plasma to create reactive groups that interact with the adhesive and the additive.

20 16. The method of Claim 13, wherein said step of joining further includes the step of treating said glass lower plate by pyrolysis to remove contaminants and expose silanol groups.

25 17. The method of Claim 13, wherein said polymeric material is polystyrene.

18. The method of Claim 13, wherein said inorganic material is glass.

19. The method of Claim 13, wherein said adhesive is a
5 non-cytotoxic adhesive.

20. The method of Claim 13, wherein said additive is a silane monomer.

10 21. The method of Claim 13, wherein said additive is 3-(trimethoxysilyl)propyl methacrylate.

22. The method of Claim 13, wherein said additive is 3-(mercaptopropyl)trimethoxy silane.

15 23. The method of Claim 13, wherein said additive is tris2-(methoxyethoxy)vinyl silane.

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